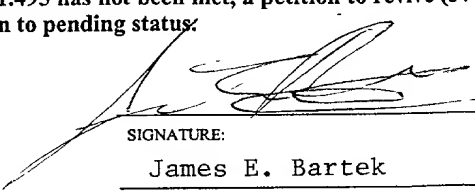


424 Rec'd PCT/PTO 06 MAR 2000

FORM PTO-1390 (REV 12-29-99)		U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE		ATTORNEY'S DOCKET NUMBER PET 43 US	
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371				U.S. APPLICATION NO. (if known, see 35 CFR 1.5) 09/508028	
INTERNATIONAL APPLICATION NO. PCT/US98/11721		INTERNATIONAL FILING DATE 05 June 1998		PRIORITY DATE CLAIMED 05 June 1997	
TITLE OF INVENTION PLASTIC MASKING COVER					
APPLICANT(S) FOR DO/EO/US Graham, et al.					
Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:					
1. <input checked="" type="checkbox"/> This is a FIRST submission of items concerning a filing under 35 U.S.C. 371. 2. <input type="checkbox"/> This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371. 3. <input checked="" type="checkbox"/> This express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1). 4. <input type="checkbox"/> A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date. 5. <input checked="" type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371(c)(2)) a. <input checked="" type="checkbox"/> is transmitted herewith (required only if not transmitted by the International Bureau). b. <input type="checkbox"/> has been transmitted by the International Bureau. c. <input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US). 6. <input type="checkbox"/> A translation of the International Application into English (35 U.S.C. 371(c)(2)). 7. <input type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371(c)(3)) a. <input type="checkbox"/> are transmitted herewith (required only if not transmitted by the International Bureau). b. <input type="checkbox"/> have been transmitted by the International Bureau. c. <input type="checkbox"/> have not been made; however, the time limit for making such amendments has NOT expired. d. <input type="checkbox"/> have not been made and will not be made. 8. <input type="checkbox"/> A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)). 9. <input checked="" type="checkbox"/> An oath or declaration of the inventor(s) (35 U.S.C. 371(c)(4)). 10. <input type="checkbox"/> A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371(c)(5)). Items 11. to 16. below concern document(s) or information included: 11. <input type="checkbox"/> An Information Disclosure Statement under 37 CFR 1.97 and 1.98. 12. <input type="checkbox"/> An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included. 13. <input type="checkbox"/> A FIRST preliminary amendment. <input type="checkbox"/> A SECOND or SUBSEQUENT preliminary amendment. 14. <input type="checkbox"/> A substitute specification. 15. <input type="checkbox"/> A change of power of attorney and/or address letter. 16. <input checked="" type="checkbox"/> Other items or information: -Small Entity Statement -Declaration and Power of Attorney (unsigned) -International Preliminary Examination Report					

U.S. APPLICATION NO. 09/508028		INTERNATIONAL APPLICATION NO. PCT/US98/11721		ATTORNEY'S DOCKET NUMBER PET 43 US	
17. <input checked="" type="checkbox"/> The following fees are submitted: BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)): Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO and International Search Report not prepared by the EPO or JPO \$970.00 International preliminary examination fee (37 CFR 1.482) not paid to USPTO but International Search Report prepared by the EPO or JPO \$840.00 International preliminary examination fee (37 CFR 1.482) not paid to USPTO but international search fee (37 CFR 1.445(a)(2)) paid to USPTO \$690.00 International preliminary examination fee paid to USPTO (37 CFR 1.482) but all claims did not satisfy provisions of PCT Article 33(1)-(4) \$670.00 International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(1)-(4) \$96.00 ENTER APPROPRIATE BASIC FEE AMOUNT =				CALCULATIONS PTO USE ONLY	
Surcharge of \$130.00 for furnishing the oath or declaration later than <input checked="" type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(e)).				\$ 130.00	
CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE		
Total claims	9 - 20 =	0	X \$18.00	\$ 0	
Independent claims	2 - 3 =	0	X \$78.00	\$ 0	
MULTIPLE DEPENDENT CLAIM(S) (if applicable)			0	+ \$260.00	\$ 0
TOTAL OF ABOVE CALCULATIONS =				\$ 800.00	
Reduction of 1/2 for filing by small entity, if applicable. A Small Entity Statement must also be filed (Note 37 CFR 1.9, 1.27, 1.28).				\$ 400.00	
SUBTOTAL =				\$ 400.00	
Processing fee of \$130.00 for furnishing the English translation later than <input type="checkbox"/> 20 <input type="checkbox"/> 30 months from the earliest claimed priority date (37 CFR 1.492(f)).				\$ 0	
TOTAL NATIONAL FEE =				\$ 400.00	
Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31). \$40.00 per property				\$ 0	
TOTAL FEES ENCLOSED =				\$ 400.00	
				Amount to be refunded:	\$
				charged:	\$
a. <input checked="" type="checkbox"/> A check in the amount of \$ <u>400.00</u> to cover the above fees is enclosed. b. <input type="checkbox"/> Please charge my Deposit Account No. _____ in the amount of \$ _____ to cover the above fees. A duplicate copy of this sheet is enclosed. c. <input checked="" type="checkbox"/> The Commissioner is hereby authorized to charge any additional fees which may be required, or credit any overpayment to Deposit Account No. <u>23-0500</u> . A duplicate copy of this sheet is enclosed.					
NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.					
SEND ALL CORRESPONDENCE TO: John A. Waters (Reg. No. 24,802) James E. Bartek (Reg. No. 34,770) Waters & Morse, P.C. 125 Ottawa Ave., N.W.; Suite 400 Grand Rapids, MI 49503 US					
				SIGNATURE:  James E. Bartek	
				NAME 34,770	
				REGISTRATION NUMBER	

Applicant or Patentee: Graham Chapman, Adam Lowry, Paul G. Keiswetter, James K. Craig, Paul C. Keiswetter
Serial or Patent No: _____
Filed or Issued: Filed Herewith
For: PLASTIC MASKING COVER

VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY
STATUS (37 C.F.R. § 1.9(f) and 1.27(c)) - SMALL BUSINESS CONCERN

I hereby declare that I am

- ☐ the owner of the small business concern identified below:
☒ an official of the small business concern empowered to act on behalf of the concern identified below.

NAME OF CONCERN Petoskey Plastics, Inc.
ADDRESS OF CONCERN 4226 U.S. 31 South, Petoskey, MI 49770

I hereby declare that the above identified small business concern qualifies as a small business concern as defined in 13 C.F.R. § 121.3-18, and reproduced in 37 C.F.R. § 1.9(d), for purposes of paying reduced fees under sections 41(a) and (b) of Title 35, United States Code, in that the number of employees of the concern, including those of its affiliates, does not exceed 500 persons. For purposes of this statement, (1) the number of employees of the business concern is the average over the previous fiscal year of the concern of the persons employed on a full-time, part-time or temporary basis during each of the pay periods of the fiscal year, and (2) concerns are affiliates of each other when either, directly or indirectly, one concern controls or has the power to control the other, or a third party or parties controls or has the power to control both.

I hereby declare that rights under contract or law have been conveyed to and remain with the small business concern identified above with regard to the invention, entitled PLASTIC MASKING COVER and described in

- ☒ the specification filed herewith.
☐ the patent application identified above
☐ the patent identified above.

If the rights held by the above identified small business concern are not exclusive, each individual, concern or organization having rights to the invention is listed below* and no rights to the invention are held by any person, other than the inventor, who could not qualify as an independent inventor under 37 C.F.R. § 1.9(c) or by any concern which would not qualify as a small business concern under 37 C.F.R. § 1.9(d) or a nonprofit organization under 37 C.F.R. § 1.9(e). * NOTE: Separate verified statements are required from each named person, concern or organization having rights to the invention availing to their status as small entities (37 C.F.R. § 1.27).

NAME (none)
ADDRESS _____
☐ INDIVIDUAL ☐ SMALL BUSINESS CONCERN ☐ NON-PROFIT ORGANIZATION

NAME (none)
ADDRESS _____
☐ INDIVIDUAL ☐ SMALL BUSINESS CONCERN ☐ NON-PROFIT ORGANIZATION

I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 C.F.R. § 1.28(b)).

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

NAME OF PERSON SIGNING Marilyn Cummings
TITLE OF PERSON OTHER THAN OWNER Secretary
ADDRESS OF PERSON SIGNING 4226 U.S. 31 South, Petoskey, MI 49770
SIGNATURE Marilyn K. Cummings DATE 6-5-98

1/1pex.

PLASTIC MASKING COVER

CROSS REFERENCE TO RELATED APPLICATION

This is a continuation of co-pending provisional U.S. patent application, serial no. 60/048,791, filed June 6, 1997.

BACKGROUND OF THE INVENTION

The invention relates to protective masking material used in painting, re-painting, touching-up or detailing metal and other material surfaces in the automotive, aircraft, marine and other industries. The traditional way to protect a surface from stray and unnecessary paint or other coating materials has been to cover the surface required to be protected with a paper (including coated paper), generally dispensed from a roll. At the edges this paper is taped to the surface to be protected with an adhesive tape.

Paper has several disadvantages. First, it has to be coated to make it at least partially impervious to the typical materials used in coating and painting. Second, it is stiff and difficult to maneuver around corners and into position. Further, it is susceptible to humidity and water and thus has problems during wet sanding and accidental exposure to water spraying in repair and body shops. Finally, because paper does not cling to metal or other surfaces, it is difficult to apply. Two hands are necessary to apply it, so one hand is not free for taping.

Simple commodity plastic covering, e.g. polyethylene film (PE), overcomes many of the disadvantages of paper. It is not susceptible to water and is sufficiently flexible to be maneuverable, but it does not have sufficient cling and suffers from a major problem because adhesion of paint is poor. Paint that is sprayed on to the polyethylene

surface does not adhere and flakes off after drying, causing problems in the area where the painting is taking place, such as an automotive body shop.

The problem with adhesion to polyethylene is due to the low surface energy (or surface tension) of unmodified and untreated polyethylenes; typically the surface energy of PE is 29-31 dynes/cm. In order for a coating to bond initially to a surface such as PE the substrate needs to have a surface energy at least 10 dynes/cm. greater than the surface tension of the liquid. The surface energy of PE is too low for most solvents.

Several methods have been used to overcome the problem of paint flaking. One is to use special plastic materials with higher paint adhesion characteristics. Unfortunately, only a limited number of plastics are satisfactory, and most are quite expensive. Another method is to add a mineral or filler additive to the plastic to roughen the surface. The effect of additives is limited, however, and they can have an adverse effect on film strength in high concentrations. Some additives, such as slip additives, also can migrate to the film surface over time.

In addition to the foregoing, there are several physical and chemical treatments that can be used to increase the surface energy of a film. For improving the adhesion of printing inks, corona discharge is sometimes used. This involves the formation of a cold plasma by electrical discharge in atmospheric conditions. Another technique uses radio frequency or microwave energy under vacuum. An alternative to corona discharge is flame plasma treatment in which plasma is produced by burning a hydrocarbon fuel, which produces ions, free electrons, carbon atoms and oxygenated carbon and hydrocarbon

molecules. Ozone treatment, either on its own or in combination with corona treatment, also is used to achieve surface oxidation and an increase in surface energy.

An object of the present invention is to provide an improved masking film that has good paint adhesion characteristics, clings well to the product being painted, and has desirable strength and cost advantages.

SUMMARY OF THE INVENTION

A masking film in accordance with the present invention comprises at least two and preferably three co-extruded layers, including an inner layer that has enhanced "cling" properties; an outer layer which has desirable paint adhesion characteristics and resists paint peeling; and desirably a middle layer which contributes appropriate strength and tear characteristics to the product. The film also resists ultraviolet degradation.

The inner layer of the present invention is a higher density polyethylene having good cling properties. High density polyethylene (HDPE) at a thickness of about 0.2 to 1.0 mils (about 5 to 25 microns) in a three layer film provides cling and stiffness to the product and resists paint penetration to the covered surface. HDPE also has a higher melting point (which is desirable when paint is cured by baking) and is less abrasive than other polyethylenes on a car surface.

The outer layer is formed from a treated polymer having a high surface energy. Polymers that have been found to work well include polyvinyl alcohol; polyvinyl acetate; ethylene vinyl alcohol copolymers (of ethylene co-monomer ratios of between 27 and 48 percent); and ethylene vinyl acetate or "EVA" (with a vinyl content of between 7 and 28 percent). EVA is especially preferred. Polyacrylates and polyesters also work but

are quite expensive. Even the less expensive materials are more expensive than conventional low density polyethylene. Accordingly, it is preferred that they be used as a thin layer of about 0.2 to 0.3 mils (about 3 to 25 microns) in a three layer co-extruded structure. This is sufficient to achieve the required surface effect but is cost effective. The surface energy of the EVA or other selected polymer is enhanced by applying a surface treatment to the polymer. Specifically, corona discharge on the surface has been used to provide a surface energy of at least 50 dynes/cm. at the time of treatment. Corona-treated polyolefins also will work as an outside layer but they are not as satisfactory as EVA and the other polymers. HDPE is preferred over lower density polyethylenes. A difference in surface energy alone does not appear to explain the superiority of the other polymers.

The film can be formed with just the outer and inner layers. However, the outer and inner surface layers desirably are co-extruded with a central core layer of a more cost effective material that provides the desired combination of tensile strength, elasticity, and tear strength. The use of an inexpensive core layer for strength makes it possible to make the more expensive outer and inner layers thinner. The core layer is a thermoplastic polymer compatible with the outer and inner layers, such as polyethylene or polypropylene, preferably low density polyethylene or a combination of low density polyethylene and linear low density polyethylene. In order to provide a product that can be dispensed satisfactorily in roll form on a typical masking paper dispenser, a combination of good tensile strength and machine direction tear is necessarily combined with a relatively weak cross-directional tear. This can be achieved by using the selected polymers in combination with the processing conditions necessary to provide these characteristics. It has been found

that by using at least 70 percent of a fractional melt index low density polyethylene in the center layer, good strength and tear properties can be produced.

While the individual characteristics of the surface layers is a major factor in the cling and paint adhesion characteristics of the product, the process of co-extrusion and the combination of materials extruded also influence the characteristics of the final product. For instance, co-extruding a soft material on a hard material seems to enhance static energy and cling properties. The use of separate extruders for the separate materials also appears to enhance the cling properties of the product.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of a roll or "log" of masking film.

FIG. 2 is a cross-sectional view of the masking film.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENT

Referring to the drawings, plastic masking film 10 comprises an outer layer 12, an inner layer 14 and desirably a core or middle layer 16. The inner layer is designed to be applied to the surface 18 of an automobile body or other product being painted. Film 10 is formed in a conventional manner by co-extrusion.

Inner layer 14 comprises a higher density polyethylene having good cling properties. High density polyethylene (HDPE) having a thickness of about 0.2 to 1.0 mils (about 5 to 25 microns) with a three layer film is satisfactory to provide the necessary surface characteristics and stiffness to the product, while maintaining cost effectiveness by the use of a thin layer.

Outer layer 12 provides paint adherence to hold the paint on coatings during spray, curing, and drying without permitting the paint to flake. The outer layer preferably is EVA having a thickness of about 0.2 to 0.3 mils (about 5 - 8 microns) in a three layer film. The EVA is treated with a corona discharge treatment in order to enhance the surface energy or surface tension of the outer layer. The outer layer as constructed has a surface energy as high as 50 dynes/cm or higher at the time of manufacture, and the surface energy remains at a minimum of 35 dynes per centimeter until use.

The core layer of the structure comprises polyethylene or other polyolefin to give strength to the film.

A desired core is a combination of low density polyethylene (LDPE) and linear low density polyethylene (LLDPE), including some post-consumer recycle material, having a thickness of about 0.2 to 2.0 mils (about 5 to 50 microns). The LDPE enhances the tearability of the film from conventional masking paper dispensers. The use of a filler material, such as calcium carbonate, also enhances the tearability of the film.

Overall, the plastic film is extruded to a total thickness of about 0.5 to 3.0 mils, (about 12 to 75 microns) with a thickness of about 1.5 mils (about 50 microns) being desirable.

The co-extruded film of the present invention provides a combination of qualities necessary for good masking material. The film is impervious to the constituents of paints and coatings. It has good handleability, which is provided by a combination of polymers which give it the necessary strength, elasticity and tear characteristics. The outer layer resists paint flaking while the inner layer enhances the cling of the film to the product

being painted. Thus, the film can simply be laid against the side of the product and it will remain in place for trimming and use. The film is thin, easy to handle, and can easily be applied and removed.

Furthermore, the film of the present invention has sufficient UV resistance that the film resists adverse effects such as "bloom" on the metallic surface in contact with the film when exposed to ultraviolet radiation.

Another feature of the present invention is the incorporation of a color or printing on at least one side of the material in order to indicate which side of the material is the sticky side and which side is the paint adhesion side. This minimizes the risk of misapplication of the film with the wrong side against the surface to be painted.

Another feature of the present invention is that the film is packaged in logs or rolls that are compatible with the form in which masking paper is presently dispensed. Masking paper used in auto body shops typically is packaged in long logs or rolls and mounted on roll dispensers. The paper is torn off the rolls in sheets of any desired length. Many plastic masking materials presently on the market are sold in sheet form of separate sheets. The present invention permits the plastic masking material to mount on existing paper dispensers and be dispensed in the same manner as the masking paper that body shop operators are already familiar with.

The masking film of the present invention desirably is formed in rolls that are 18 inches wide and approximately 400 feet in length. The film can be folded over once or more on the rolls as shown in FIG. 1 to form folded sheets in order to provide a wider sheet of material. Preferably, the outer layer is on the extensor surface

of the folded material. Alternatively, the rolls can be 36 inches wide (or other widths) and the film can be folded over more than one time to form multiple folded layers. For a full body cover, the unfolded film width can be as much as eight to twelve feet or any width desired. A more narrow width is used for film having a "critical edge", which is an edge that is designed to be adjacent a surface being painted. The cling characteristics of the sheeting are such that the film clings to the surface of the painted product but does not adhere to itself in a roll with such tenacity that the film cannot be separated. The material, particularly the central core, is fabricated so that the film has good strength in one direction but tears more easily in a transverse direction so the film can more easily be torn off the roll.

It should be understood that the foregoing is merely illustrative of the preferred practice of the present invention and that various modifications in the details of the embodiments disclosed herein may be made without departing from the spirit and scope of the present invention.

CLAIMS

1. A plastic masking film comprising at least two layers, an outer layer having sufficient surface energy to ensure the adherence of paint and an inner layer providing cling to a surface.

2. A film according to claim 1 in which the outer layer comprises a corona-treated thermoplastic material having a surface with a surface energy greater than 50 dynes/cm. at the time of manufacture and which remains at a minimum of 35 dynes/cm. until use.

3. A film according to claim 2 in which the thermoplastic material of the outer layer comprises one or a combination of members selected from the group consisting of ethylene vinyl acetate, polyvinyl alcohol, polyvinyl acetate, ethylene vinyl alcohol, and high density polyethylene.

4. A film according to claim 1 in which the inner layer comprises high density polyethylene.

5. A film according to claim 1 and further comprising a central core layer formed of one or a combination of polyolefins compatible with the inner and outer layers.

6. A film according to claim 2 in which a mineral or other particulate filler is incorporated in the outer layer to improve the adhesion of paint or coatings to the plastic surface.

5 7. A film according to claim 1 in which at least one of the layers is colored or marked to visually distinguish between the inner and outer layers.

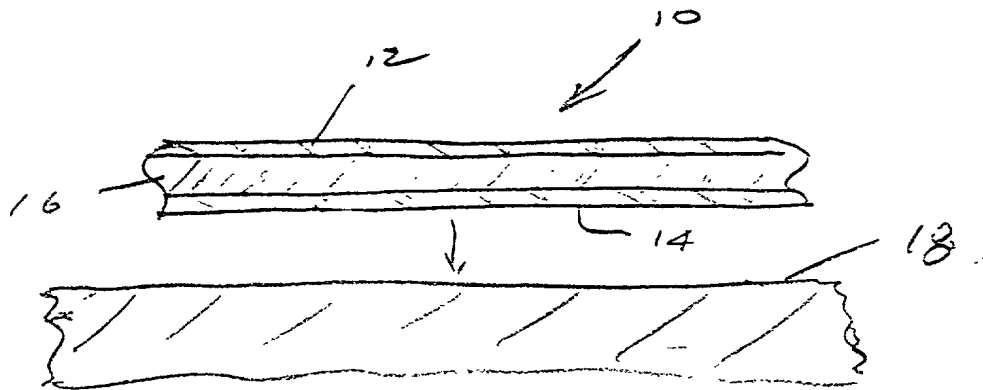
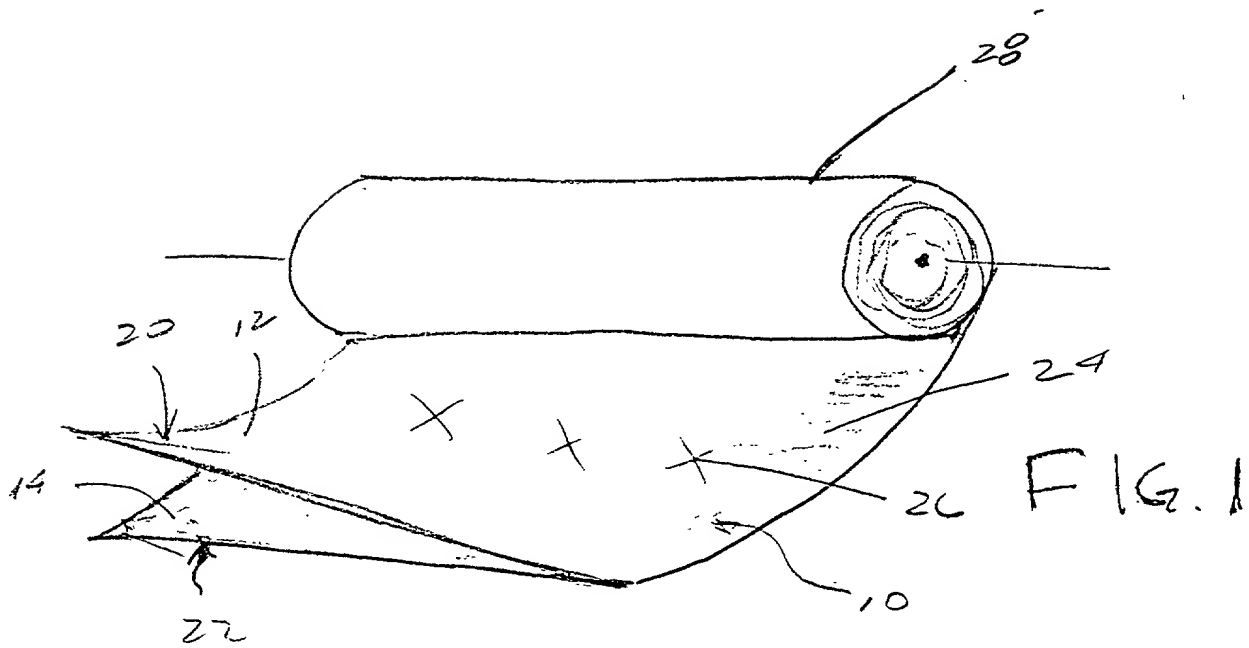
8. A film according to claim 5 wherein the core layer comprises one or a combination of members selected from the group consisting of low density polyethylene and linear low density polyethylene.

0 9. A plastic masking film comprising at least three co-extruded thermoplastic layers, an inner layer adapted to contact a product being painted, an outer layer on an opposite exterior surface of the film, and a central core layer between the inner and outer layers, the inner layer comprising high density polyethylene in a thickness of about 0.2 to 1.0 mils (about 5 to 25 microns), the central core layer comprising one or a combination of members formed from the group consisting of low density polyethylene and linear low density polyethylene, the thickness of the inner layer being about 0.2 to 2.0 mils (about 5 to 50 microns), the outer layer comprising a corona-treated material selected from the group consisting of one or a combination of members selected from the group consisting of ethylene vinyl acetate, polyvinyl alcohol, polyvinyl acetate, ethylene vinyl alcohol, and high

density polyethylene the outer layer being about 0.2 to 0.3 (about 5 to 8 microns) mils thick.

ABSTRACT

A plastic masking film comprises at least two layers, an outer layer having sufficient surface energy to ensure the adherence of paint, and an inner layer providing cling to a surface. The outer layer comprises a corona-treated thermoplastic material having a surface with a surface energy greater than 50 dynes/cm. at the time of manufacture and which remains at a minimum of 35 dynes/cm. until use. The thermoplastic material of the outer layer comprises one or a combination of members selected from the group consisting of ethylene vinyl acetate, polyvinyl alcohol, polyvinyl acetate, ethylene vinyl alcohol, and high density polyethylene. The inner layer comprises high density polyethylene. Desirably, the film also includes a central core layer formed of one or a combination of polyolefins, preferably low-density polyethylene or linear low-density polyethylene, compatible with the inner and outer layers. A mineral or other particulate filler can be incorporated in the outer layer to improve the adhesion of paint or coatings to the plastic surface.



09508028-103000

DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I declare:

I believe I am an original, first and joint inventor of the subject matter which is claimed and for which a patent is sought on the invention entitled Plastic Masking Cover, the specification of which was filed on 05 June 1998, as Application No. PCT/US98/11721, now US Application No. 09/508,028, and was not amended.

My residence, post office address and citizenship are as stated below next to my name.

I have reviewed and understand the contents of the specification identified above, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose to the United States Patent and Trademark Office (the Office), all information which is known by me to be material to patentability as defined in Title 37, Code of Federal Regulations (C.F.R.), Section 1.56.

CLAIM OF PRIORITY

I hereby claim the benefit under Title 35, United States Code, of any United States application(s) listed below and, insofar as the above-identified specification, including claims, discloses and claims subject matter in addition to that disclosed in the prior co-pending application(s), listed below, I acknowledge the duty to disclose to the Office, all information which is known by me to be material to patentability as defined in 37 C.F.R. §1.56, which became available between the filing date of the prior application and the national or PCT international filing date of this application.

U.S. Application No. 60/048,791, filed on 06 June 1997, and
co-pending at the filing of the present application

POWER OF ATTORNEY

I hereby appoint the patent law firm of Waters & Morse, P.C., 400 Ledyard Building, 125 Ottawa, N.W., Grand Rapids, Michigan 49503, telephone number 616-458-7535, facsimile number 616-458-7548, and the individual patent attorneys and patent agents at such patent law firm, namely, John A Waters, Reg. No. 24,802, and James E. Bartek, Reg. No. 34,770, my attorneys or agents with full power of substitution and revocation, to prosecute this application and to transact all business in and to receive all correspondence from the Patent and Trademark Office connected therewith.

All statements made herein of my own knowledge are true and all statements made on information and belief are believed to be true, and further, these statements are made with the knowledge that willful false statements and the like are punishable by fine or imprisonment, or both, under Title 18, United States Code, Section 1001, and that such willful false statements may jeopardize the validity of this application or any patent issued thereon.

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